

## Weekly report (2017-10-23 ----- 2017-10-29)

Oct 29<sup>th</sup>, 2017, 21:09 pm

### 1. Progress

Table 1. Progress

Tasks	IN PROGRESS	Date
dimensionality reduction		11.30
highway project		12.10
statistic charts survey	collect papers and read some of them	12.15
*2Vec survey	read papers	12.30

### 2. Research

#### 2.1 Paper reading

##### 1. Interactive Regression Lens for Exploring Scatter Plots

Tasks: propose a system for visual-interactive regression analysis for scatter plot data, supporting both global and local regression modeling.

Enhance method: propose a novel concept for visual-interactive regression analysis. In this extended scatter plot lens, users can select subsets of the data.

Model: regression analysis model.

2. An Empirical Study on the Reliability of Perceiving Correlation Indices using Scatterplots

Tasks: report an empirical study that examines how humans' perception of correlation using scatterplots relates to the Pearson's product-moment correlation coefficient (PPMCC).

Design method: consider several types of controlled variations, including different PPMCC values, numbers of data points (ndp), levels of reflective symmetry of data enclosures, levels of progressive symmetry of data enclosures, and patterns of spatial distribution.

3. Scatterplots: Tasks, Data, and Designs

Tasks: Under different circumstances, according to data's characteristics and tasks to decide which kind of scatterplot design is appropriate.

Limitations: Traditional scatterplots fail to scale as the complexity and amount of data increases.

Enhance method: According to the data's characteristic, such as data's size and its distribution, to influence the design of the scatterplot.

4. Towards Perceptual Optimization of the Visual Design of Scatterplots

Tasks: support non-experts in the rapid design of effective scatterplots.

Enhance method: describes the construction of a cost function, building on the long history of research into quality metrics in visualization. This paper provide the first optimization-based formulation of the visual design of scatterplots.

#### 5. The Connected Scatterplot for Presenting Paired Time Series

Tasks: The connected scatterplot visualizes two related time series in a scatterplot and connects the points with a line in temporal sequence.

Limitations: A connected scatterplot of two time series can only be drawn when the points in time at which they are sampled are the same, or largely the same.

Enhance method: The paper describe paired time series relationships appear in a connected scatterplot. The connected scatterplot seems to be effective for communicating data and engaging viewers, and it shows some structures in data (like time-shifted patterns) in a different way compared with other techniques

## 2.2 Collected paper

Collected paper of recent years and classify them by items, including the related survey of statistic charts, scatterplots, histogram, line chart, bar chart, sparkline, Venn diagram and heat map etc.

Related Survey			
序号	年份	论文名	期刊
1	2017	A Survey on Visual Approaches for Analyzing Scientific Literature and Patents	TVCG
2	2015	Survey on Visualization Layout for Big Data	International Conference on Intelligent Science and Big Data Engineering
3	2014	Financevis. net: A visual survey of financial data visualizations	Infovis
4	2013	Visualization and Visual Analysis of Multifaceted Scientific Data: A Survey	TVCG
5	2011	Data and information visualization methods, and interactive mechanisms: A survey	International Journal of Computer Applications
6	2011	Survey of Contrast Enhancement Techniques based on Histogram Equalization	International Journal of Advanced Computer Science and Applications
7	2010	Hierarchical Aggregation for Information Visualization: Overview, Techniques, and Design Guidelines	TVCG
ScatterPlots			
序号	年份	论文名	期刊
1	2018	Cluster-based Visual Abstraction for Multivariate Scatterplots	TVCG
2	2017	Scatterplots: Tasks, Data, and Designs	TVCG
3	2017	Towards Perceptual Optimization of the Visual Design of Scatterplots	TVCG
4	2017	Scatteract: Automated extraction of data from scatter plots	ECML PKDD
5	2016	InterAxis: Steering Scatterplot Axes via Observation-Level Interaction	TVCG

6	2016	Gatherplots: Extended Scatterplots for Categorical Data	Journal of Latex Class Files2016
7	2016	The Connected Scatterplot for Presenting Paired Time Series	TVCG
8	2015	Visualnostics: Visual Guidance Pictograms for Analyzing Projections of High-dimensional Data	Computer Graphics Forum
9	2015	Dynamic Opacity Optimization for Scatter Plots	Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems
10	2014	Visual abstraction and exploration of multi-class scatterplots	TVCG

### Histogram

序号	年份	论文名	期刊
1	2017	Histogram equalization and specification for high-dimensional data visualization using RadViz	Proceedings of the Computer Graphics International Conference
2	2017	Adaptive Sampling for Rapidly Matching Histograms	arXiv
3	2016	Performance Histogram Curve: Abstractive Visualization and Analysis of NBA Games	International Journal of Software
4	2016	Scalable Visualization of Time-varying Multi-parameter Distributions Using Spatially Organized Histograms	TVCG
5	2015	Hybrid Data Visualization Based on Depth Complexity Histogram Analysis	Computer Graphics Forum
6	2015	Scalable Visualization of Discrete Velocity Decompositions Using Spatially Organized Histograms	LDAV
7	2014	Background subtraction by combining temporal and spatio-temporal histograms in the presence of camera movement	Machine Vision and Applications
8	2014	The Effects of Interactive Latency on Exploratory Visual Analysis	TVCG
9	2013	Integrating Isosurface Statistics and Histograms	TVCG

<b>Line Chart</b>			
序号	年份	论文名	期刊
1	2017	Line Graph or Scatter Plot? Automatic Selection of Methods for Visualizing Trends in Time Series	TVCG
2	2016	Visual Analysis of Cloud Computing Performance Using Behavioral Lines	TVCG
3	2016	TimeNotes: A Study on Effective Chart Visualization and Interaction Techniques for Time-Series Data	TVCG
4	2016	ViDX: Visual Diagnostics of Assembly Line Performance in Smart Factories	VAST
5	2015	An Efficient Framework for Generating Storyline Visualizations from Streaming Data	TVCG
6	2014	Ranking Visualizations of Correlation Using Weber's Law	TVCG
<b>Bar Chart</b>			
序号	年份	论文名	期刊
1	2017	Investigating the Use of a Dynamic Physical Bar Chart for Data Exploration and Presentation	TVCG
2	2017	Readability and Precision in Pictorial Bar Charts	EuroVis
3	2017	Raising the Bars: Evaluating Treemaps vs. Wrapped Bars for Dense Visualization of Sorted Numeric Data	Proceedings of the 43rd Graphics Interface Conference
4	2015	Exploring Interactions with Physically Dynamic Bar Charts	Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems
5	2015	An Evaluation of the Impact of Visual Embellishments in Bar Charts	Computer Graphics Forum
6	2015	Evaluating Multi-Column Bar Charts and Treemaps for Dense Visualization of Sorted Numeric Data	Under review
7	2014	Four Experiments on the Perception of Bar Charts	TVCG

<b>Sparkline</b>			
序号	年份	论文名	期刊
1	2017	Squares: Supporting Interactive Performance Analysis for Multiclass Classifiers	TVCG
2	2014	Attribute Signatures: Dynamic Visual Summaries for Analyzing Multivariate Geographical Data	TVCG
3	2014	Interactive Generation of Visual Summaries for Multivariate Geographical Data Analysis	Eighth International Conference on Geographic Information Science
4	2014	Moving beyond sequential design: Reflections on a rich multi-channel approach to data visualization	TVCG
5	2013	Visual Analysis of Topic Competition on Social Media	TVCG
6	2012	RankExplorer: Visualization of Ranking Changes in Large Time Series Data	TVCG
7	2010	SparkClouds: Visualizing Trends in Tag Clouds	TVCG
8	2006	Beautiful Evidence	Graphics Press LLC
9	2004	Sparklines: Intense, simple	Word-sized graphics
<b>Venn diagram</b>			
序号	年份	论文名	期刊
1	2017	Patterns of multimorbidity in people with severe or profound intellectual and motor disabilities	
2	2016	The State-of-the-Art of Set Visualization	Computer Graphics Forum
3	2015	VennDIS: A JavaFX - based Venn and Euler diagram software to generate publication quality figures	Proteomics
4	2014	A survey of Euler diagrams	Journal of Visual Languages & Computing
5	2014	UpSet: Visualization of Intersecting Sets	TVCG

6	2012	Exact and Approximate Area-Proportional Circular Venn and Euler Diagrams	TVCG
7	2010	Untangling Euler Diagrams	TVCG
<b>Heat map</b>			
序号	年份	论文名	期刊
1	2017	Fauxvea: Crowdsourcing Gaze Location Estimates for Visualization Analysis Tasks View Document	TVCG
2	2017	Data Flow Analysis and Visualization for Spatiotemporal Statistical Data without Trajectory Information	TVCG
3	2017	Design and Evaluation of WebGL-Based Heat Map Visualization for Big Point Data	The Rise of Big Spatial Data
4	2016	Heatmap Explorer: an interactive gaze data visualization tool for the evaluation of computer interfaces	Proceedings of the 15th Brazilian Symposium on Human Factors in Computer Systems Article
5	2016	3D Regression Heat Map Analysis of Population Study Data	TVCG
6	2014	A Heatmap-Based Time-Varying Multi-variate Data Visualization Unifying Numeric and Categorical Variables	IV
7	2014	Maps of Computer Science	PacificVis